

What is claimed is:

1. A cord-wrapping device, comprising:

a cradle;

a first drum mounted on said cradle for rotation about a first axis relative

5 to said cradle, said drum having an upstream end and a downstream end and defining a steeply inclined inlet surface portion and a first slightly inclined surface portion adjacent said steeply inclined portion;

a first cord mounted on said first drum, said cord having a diameter; and

a feed guide fixed relative to said cradle, said feed guide directing said

10 cord onto said steeply inclined portion as the cord wraps onto the drum, wherein the slope of said steeply inclined portion is sufficient that a load sufficient to keep the cord taut as it winds up onto the drum is also sufficient to cause the cord to slide down said steeply inclined portion toward said first slightly tapered portion and to push preceding wraps of said cord along said first slightly tapered portion as the drum rotates.

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2. A cord-wrapping device as recited in claim 1, and further comprising a

second slightly inclined portion adjacent said first slightly inclined portion, wherein said

first slightly inclined portion has an acute upstream angle relative to said axis of

rotation, and said second slightly inclined portion has a smaller acute upstream angle of

20 taper relative to said axis of rotation than does said first slightly inclined portion.

3. A cord-wrapping device as recited in claim 1, wherein said steeply inclined

portion extends an axial distance that is at least 1 ½ cord diameters long.

4. A cord-wrapping device as recited in claim 3, wherein said steeply inclined portion forms an upstream angle relative to said axis of rotation of between 10 degrees and 45 degrees.

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5. A cord-wrapping device as recited in claim 1, wherein said feed guide directs said cord at least $\frac{3}{4}$ of a cord diameter in the upstream axial direction up said steeply inclined portion.

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6. A cord-wrapping device as recited in claim 1, wherein said feed guide has an upstream guide surface and a downstream guide surface, and said upstream guide surface is located at least two cord diameters from said downstream guide surface, permitting a wide range of entry angles of said cord.

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7. A cord-wrapping device as recited in claim 1, and further comprising a second drum mounted for rotation relative to a cradle about said first axis, said second drum also defining a steeply inclined inlet portion and a first slightly inclined portion adjacent said steeply inclined portion;

means for causing said first and second drums to rotate together; and

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a second cord mounted on said second drum, wherein said first cord unwraps from said first drum as said second cord wraps onto said second drum.

8. A cord-wrapping device as recited in claim 7, and further comprising a

second feed guide which directs said second cord onto the steeply inclined portion of said second drum such that said second cord initially wraps onto its respective steeply inclined portion.

5 9. A cord-wrapping device as recited in claim 1, wherein said feed guide has an upstream guide surface and a downstream guide surface, said downstream guide surface defining a large radius of curvature which is at least twice the diameter of said cord.

10 10. A cord-wrapping device as recited in claim 6, wherein said downstream guide surface defines a large radius of curvature, which is at least twice the diameter of said cord.

15 11. A cord-wrapping device, comprising:
 a cradle;
 a first drum mounted on said cradle for rotation about a first axis relative to said cradle, said drum having an upstream end and a downstream end and defining a steeply inclined inlet surface portion forming an upstream angle relative to said axis of rotation of between 10 degrees and 45 degrees, and a first slightly inclined surface
20 portion adjacent said steeply inclined portion;

 a first cord mounted on said first drum, said cord having a diameter, wherein said steeply inclined inlet surface portion extends an axial distance of at least 1-½ cord diameters; and

a feed guide fixed relative to said cradle, said feed guide having an upstream guide surface and a downstream guide surface, said upstream and downstream guide surfaces being located at least two cord diameters apart from each other in the axial direction,

5 wherein said downstream guide surface has a radius of curvature of at least twice the diameter of the cord,

 said feed guide directing said cord at least $\frac{3}{4}$ of a cord diameter in the axial direction up said steeply inclined portion as the cord wraps onto the drum,

 wherein the slope of said steeply inclined portion is sufficient that a load
10 sufficient to keep the cord taut as it winds up onto the drum is also sufficient to cause the cord to slide down said steeply inclined portion toward said first slightly tapered portion and to push preceding wraps of said cord along said first slightly tapered portion as the drum rotates.

15 12. A cord-wrapping device, comprising:

 first and second drums mounted for rotation together about a first axis;

 first and second cords mounted on said first and second drums, respectively, each of said cords having a diameter, wherein said first cord unwraps from
20 said first drum as said second cord wraps onto said second drum;

 each of said drums having an upstream end and a downstream end and defining a steeply inclined inlet surface portion forming an upstream angle relative to said axis of rotation of between 10 degrees and 45 degrees, and a first

slightly inclined surface portion adjacent said steeply inclined portion;

wherein said steeply inclined inlet surface portion extends an axial distance of at least $1\frac{1}{2}$ cord diameters; and

5 first and second feed guides, each having an upstream guide surface and a downstream guide surface, said downstream guide surface having a radius of curvature of at least twice the diameter of the respective cord,

each of said feed guides directing its respective cord at least $\frac{3}{4}$ of a cord diameter in the axial direction up its respective steeply inclined portion as the cord wraps onto its respective drum,

10 wherein the slope of each of said steeply inclined portions is sufficient that a load sufficient to keep the respective cord taut as it winds up onto its drum is also sufficient to cause the cord to slide down its respective steeply inclined portion toward its respective first slightly tapered portion and to push preceding wraps of said cord along said first slightly tapered portion as the respective drum rotates.